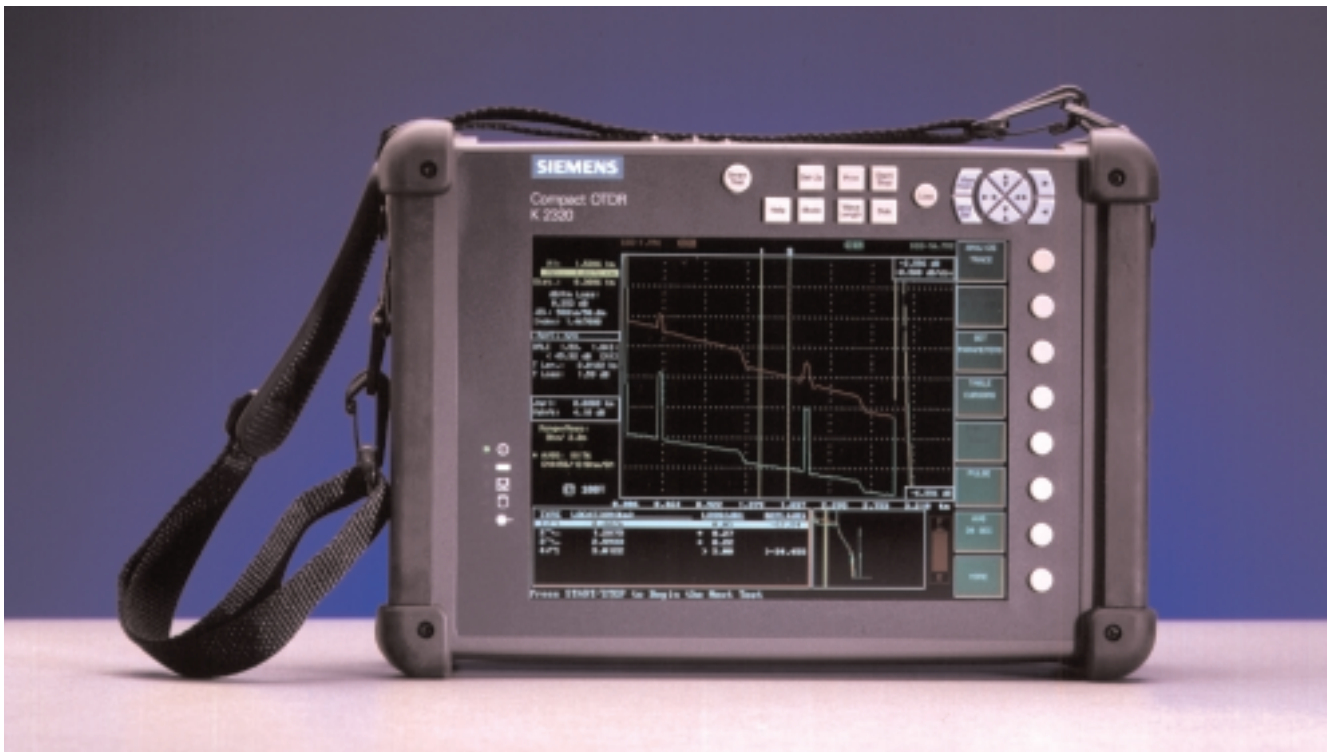
SIEMENS

Model K2320 Compact OTDR



- Large variety of high-performance modules available – single-mode up to 46 dB to offer significant distance capacity and enhances event search capabilities
- SmartTest™ Function provides a fast, one-button analysis of the entire fiber
- AutoIncrement™ Function speeds up repetitive as-built testing in high-fiber count projects, saving time, money, and reducing error
- DualTrace™ Function shows optimal traces at both wavelengths on one graph for easy analysis
- DualPulse feature allows measurement of the same fiber with two pulse widths to optimize resolution and distance measurements.
- Quick and efficient location of fiber breaks and previous event for landmarking
- Multitest capabilities offer all-in-one convenience on a field-upgradeable platform
- SoftView emulation software offers three levels of PC-based software for batch printing and editing, trace overlay, and bidirectional analysis
- Large display with active matrix color eases eyestrain during periods of extended use
- Commercially available rechargeable batteries offer hours of autonomous operation
- AC adapter as well as a 12V DC power adapter
- Multilingual operating and help screens
- Flexible Universal Connector System
- Bellcore compliant, including GR-196 formatted traces

© Siemens AG 1999. All rights reserved.

Model K2320 Compact OTDR

Description

Siemens Model K2320 Compact OTDR offers true multi-testing capability that features field-installable single-mode, multimode, and four-wavelength OTDR modules, visual fault locator, as well as optional built-in power meter and single-mode laser source. The standard unit provides internal solid-state memory for 125 traces and a floppy disk drive. An optional hard drive is also offered to allow mass data storage and speeds testing by eliminating the need to constantly exchange floppy disks in the standard drive. The product line offers a large variety of high-performance multimode and single-mode modules, including a superior single-mode unit with 46 dB dynamic range, four-wavelength multimode and single-mode optics modules, and specialty modules for out of band and water intrusion testing. Three levels of SoftView emulation software provide desktop analysis and quality documentation capability.

A large 10.4-inch (26.4 cm) display is easy to read and virtually eliminates the need to jump from screen to screen to view results. Because it is active matrix color, readability is further enhanced. The extraordinary strength, durability, and weather resistance of the custom polymer modular housing protects your equipment investment.

Troubleshooting with the K2320 is quick and easy with the SmartTest™ function. At the touch of a button, the K2320 selects the parameters and then tests the fiber. The DualTrace™ function tests and displays both wavelengths on one graph. The multitasking operating system provides fast fiber analysis and data collection. The DualPulse feature allows measurement of the same fiber with two pulse widths to optimize resolution and distance measurements.

Repetitive testing and documentation of each fiber is reduced to the shortest possible time using the AutoIncrement™ function. Only one button per fiber is needed to record both trace and event table at each wavelength. Pop-up dialog boxes guide you from fiber-to-fiber and provide warnings if a fault of above-threshold loss is found.

The Compact OTDR Concept:

The K2320 combines single-mode, multimode, and four-wavelength OTDR capabilities along with a power meter, visual fault locator, and stabilized single-mode light source into a compact platform that resides in a rugged polymer housing. Virtually any field testing can be accomplished with the unit. Capabilities include incoming reel inspections, link loss measurements, fiber attenuation (dB/km), splice and connector loss, reflectance and optical return loss measurement, length measurement, visual fault location and a 2 kHz test tone for fiber identification. With the many range and test options available, the unit can be optimized for telco, CATV or LAN applications. Specialty modules for water intrusion (1244 nm) and out of band (1625 nm) testing are also available. Because the platform is modular, OTDR and VFL options not ordered initially can be field-installed at a later date.

OTDR Functions:

The K2320 is two OTDRs in one – single-mode and multimode – making it ideal for LAN testing, where both fiber types are common. With up to 46 dB of single-mode range available, the K2320 is a powerful tool for telco and CATV applications as well.

Power Meter:

The built-in power meter options make end-to-end testing easy because data can be saved to disk and analyzed/printed with the same software used for OTDR traces. For CATV applications, a range of +20 dBm is available.

Visual Fault Locator:

The field-installable VFL makes fault location within the OTDR's deadzone possible as well as providing visual continuity checks.

Single-mode Source:

Units equipped with single-mode OTDR capability can also be equipped to function as a stabilized laser source for loss measurement.

2 kHz Test Tone:

The CheckPoint™ and CheckPoint Plus fiber identifiers can recognize this tone to locate a fiber at a splice or repair point.

Restoration Function:

The OTDR operates as a simple fault locator. At the touch of a button, the unit quickly and accurately finds the end of the fiber as well as the previous event to quickly pinpoint the break.

SmartTest Function:

Think of SmartTest as the built-in expert. One key press will select the best parameters for the connected fiber, acquire the data, and present both a trace and an event table on one screen. Both novice and expert will benefit from quick and complete fiber characterization. For the novice, getting good results requires only minimal equipment knowledge. For the expert, SmartTest can quickly set machine parameters.

DualTrace Function:

On one screen, DualTrace characterizes a fiber at both wavelengths, optimizing the pulsewidth for each. Visual comparison of performance at each wavelength is greatly enhanced by combining both traces into one graph. Wavelength-dependent losses, such as bending and pinching in splice trays, tight bends in cable placement, and compression due to temperature extremes, are also easier to identify in the DualTrace view. Such events will exhibit greater loss at the longer wavelength, both on the traces and in the event table.

DualPulse Function:

A fiber is tested at a single wavelength with two pulse widths. Two traces are displayed, one for each pulsewidth. The short pulse provides optimal event resolution, while the longer pulse provides excellent distant measurements.

AutoIncrement Function:

Documentation of new installations and repairs is performed quickly with AutoIncrement. This function can create traces and event tables at both wavelengths, save them to disk, and prompt the user for the next fiber when ready. If any unacceptable losses are detected, the user is informed before proceeding. Sequential file names are **automatically incremented** for each fiber in the test.

Data Storage:

Data is stored to either the internal solid-state memory, a standard floppy drive, or an optional hard drive. Over 50,000 traces can be stored on the hard drive. Data can also be stored in other compatible file formats such as the standard Bellcore GR-196 format.

PC Emulation Software:

SoftView emulation software turns a notebook or office PC into a fiber analysis workstation with powerful batch printing, reporting, and editing tools. Virtually all the functions available on the OTDR are available on the PC for data stored to disk. SoftView 1, included with the mainframe, provides manual operation, view trace, two trace compare, and GR-196 measurements. Level 2 Software adds 8 trace overlay with save and recall, plus batch printing. Level 3 provides bidirectional analysis and global batch processing.

Technical Data

Optical Modules Specifications

K2320M-40

Fiber Type	Multimode
Center Wavelength (±20 nm)	850 nm
Dynamic Range	24 dB
Attenuation deadzone	6.5 m

K2320M-41

Fiber Type	Multimode
Center Wavelength (±20 nm)	1300 nm
Dynamic Range	27 dB
Attenuation deadzone	7 m

K2320M-42

Fiber Type	Multimode
Center Wavelength (±20 nm)	850/1300 nm
Dynamic Range	24/27 dB
Attenuation deadzone	6.5/7 m

K2320M-13

Fiber Type	Single-mode
Center Wavelength	1310 nm ±20 nm
Dynamic Range	30 dB
Attenuation deadzone	10 m

K2320M-14

Fiber Type	Single-mode
Center Wavelength	1550 nm ±30 nm
Dynamic Range	28 dB
Attenuation deadzone	12 m

Technical Data (continued)

K2320M-15

Fiber Type	Single-mode
Center Wavelength	1310/1550 nm 20/±30 nm
Dynamic Range	30/28 dB
Attenuation deadzone	10/12 m

K2320M-23

Fiber Type	Single-mode
Center Wavelength	1310 nm ±20 nm
Dynamic Range	36 dB
Attenuation deadzone	10 m

K2320M-24

Fiber Type	Single-mode
Center Wavelength	1550 nm ±20 nm
Dynamic Range	34 dB
Attenuation deadzone	12 m

K2320M-25

Fiber Type	Single-mode
Center Wavelength	1310/1550 nm ±20 nm
Dynamic Range	36/34 dB
Attenuation deadzone	10/12 m

K2320M-34

Fiber Type	Single-mode
Center Wavelength (±20 nm)	1550 nm
Dynamic Range	40 dB
Attenuation deadzone	6 m

K2320M-36

Fiber Type	Single-mode
Center Wavelength (±20 nm)	1310/1550 nm
Dynamic Range	40/40 dB
Attenuation deadzone	6 m

K2320M-38

Fiber Type	Single-mode
Center Wavelength (±20 nm)	1550 nm
Dynamic Range	46 dB
Attenuation deadzone	6 m

K2320M-56 and K2320M-57

Fiber Type	Hybrid Multimode/Single-mode
Center Wavelength (±20 nm)	850/1300 1310/1550 nm
Dynamic Range	K2320M-56: 24/27 dB 22/22 dB K2320M-57: 24/27 dB 32/30 dB
Attenuation deadzone	6.5/7 m 10/12 m

Model K2320 Compact OTDR

General Data

Universal Connector Types	FC, ST® Compatible, SC, D4, Biconic,
- (Ultra PC standard)	DIN 47256, SMA 905/906
- (Angled PC available on certain connector types)	Diamond HMS-0/HMS-10/HMS-10A, E-2000
Reflective deadzone (typical)	3 m (multimode)/ 3.5 m (single-mode)
Pulsewidth (wavelength dependent)	4 ns to 10 µs (multimode); 4 ns to 20 µs (single-mode)
Spectral width (RMS)	10 nm
Loss resolution	0.001 dB
Distance Resolution (scale/unit dependent)	0.0001 km; 0.01 meters; 0.001kft; 1ft; 0.0001 mi
Distance Sampling	0.25, 0.5, 1, 2, 4, 8, 16 meters (range dependent)
Distance Accuracy	0.0025% of distance measurement +/- distance resolution +/- index uncertainty
Laser Certification IEC 825	CDRH class 1 requirements (eye safe) 21 CFR

(1) For dynamic range SNR=1. All measurements are typical @ 25˚ C.

(2) Multimode: 62.5 µm with PC polish; single-mode: Ultra PC with Angle PC polish available.

General Data

Mainframe and General Specifications

Display Type	10.4 inch Active Matrix Color (TFT)
Units of Measure	Meters, feet (selectable)
Operation Temperature	AC power: 0˚ to 45˚ C (32˚ to 122 ˚ F) Battery: 0˚ to 40˚ C (32˚ to 104 ˚ F)
Storage Temperature:	-20˚ to +60˚ C (-4˚ to 140 ˚ F)
Humidity	95% RH maximum, non-condensing
Maximum Altitude:	50,000 feet
Power Supply	Battery: 6 hr, typical; recharge time: 1.5 to 2 hr AC: 100-250 V, 47-63 Hz, Autoranging 12 V DC Operation
Weight	11.0 lb (4.9 kg) includes battery and module
Dimensions	9.5 in x 13.5 in x 3.75 in (24.1 cm x 34.3 cm x 9.5 cm) includes mainframe, 1 module, and battery
Data Points	Up to 16,000
Tone for Fiber ID	2 kHz
Mass Storage	Internal Solid-State Memory: Up to 125 traces; Floppy (included): 1.44 Mb, 3.5-in : Hard drive(optional) over 50,000 traces

Visual Fault Locator Option

Wavelength	635 ± 10 nm
Output Power	≥ -2 dBm (0 dBm max)
Transmission	CW or 2 Hz (blink)
Connector (Fixed)	FC, SC, or ST® Compatible
Laser Certification	IEC 825 Class 2, FDA (21CFR), Class 2

Single-mode Laser Source Option (utilizes the same port as single-mode OTDR)

Wavelength	1310/1550 nm (same as module)
Output Power	≥ -10 dBM, typical
Stability (+23˚ C, 8 hrs)	±0.2 dB
Spectral Width (RMS)	≤ 10 nm, typical
Modulation	Continuous and 2 kHz
Laser Certification IEC 825	CDRH CLASS 1 21CFR requirements (eye safety)

Power Meter Option

Wavelength Range	800 - 1800 nm
Calibrated Wavelengths	850/1300/1310/1550 nm
Optical Meter Range (factory-installed)	Standard: +10 to -55 dBm CATV: +20 to -45 dBm, (with MF-460 filter)
Detector Type	2 mm Ge PIN photodiode
Resolution	0.01 dBm, 0.01% Watts
Store Reference Mode	Yes
Accuracy	±4% @ +5 dBm to -50 dBm ±8% @ +10 dBm to +5 dBm and @ -50 dBm to -55 dBm
Linearity	±0.04 dB, +5 dBm to -55 dBm

Ordering Information

The Model K2320 Compact OTDR product line offers maximum flexibility for getting the testing capability you need. To help you get started, we combined our most popular configurations into kits for LAN, Telco, and CATV applications. There are two types of kits offered; our all-inclusive Deluxe Kit and our economical Basic Kit. If neither kit selection meets your needs, simply build your own OTDR – line-by-line.

Deluxe Kits

Deluxe K2320 Compact OTDR Kits include the mainframe with standard floppy drive, hard drive, two- or four-wavelength OTDR of choice, power meter (standard meter: + 10dBm / CATV meter: + 20 dBm measurement range), visual fault locator, and SoftView 2 emulation software – packaged in the deluxe hard shell transit case. A variety of field-installable optics modules are available for future upgrading.

Part Number	Description
K2320DK-4210-XX	Dual multimode (24/27 dB)
K2320DK-1510-XX	Short range dual single-mode (30/28 dB)
340DK-1520-XX	CATV short range dual single-mode (30/28 dB)
K2320DK-2510-XX	Mid range dual single-mode (36/34 dB)
340DK-2520-XX	CATV mid range dual single-mode (36/34 dB)
K2320DK-3610-XX	Long range dual single-mode (40/40 dB)
K2320DK-3620-XX	CATV Long range dual single-mode (40/40 dB)
K2320DK-3820-XX	CATV Extra Long range 1550 nm single-mode (46 dB)
K2320DK-5610-XX-XX[1]	Dual multimode (24/27) + single-mode (22/22 dB)
K2320DK-5710-XX-XX[1]	Dual multimode (24/27) + single-mode (32/30 dB)

Note[1]: XX = connector type: see connector code ordering information.

Basic Kits

Basic K2320 Compact OTDR Kits are for customers that desire basic OTDR capability. The kit includes the mainframe with standard floppy drive, two- or four-wavelength OTDR of choice, SoftView 1 emulation software, and the deluxe hard shell transit case. Field-installable optics modules and VFL are available to upgrade your unit in the future.

Part Number	Description
K2320BK-4200-XX	Dual multimode (24/27 dB)
K2320BK-1500-XX	Short range dual single-mode (30/28 dB)
K2320BK-2500-XX	Mid range dual single-mode (36/34 dB)
K2320BK-3600-XX	Long range dual single-mode (40/40 dB)
K2320BK-3800-XX	Extra Long range 1550 nm single-mode (46 dB)
K2320BK-5600-XX-XX[1]	Dual multimode (24/27) + Dual single-mode (22/22 dB)
K2320BK-5700-XX-XX[1]	Dual multimode (24/27) + Dual single-mode (32/30 dB)

Note[1]: For kits with dual multimode and single-mode OTDRs, the first "XX" designates the multimode OTDR, power meter, and VFL connector type.

Building Your Own Compact OTDR

If none of the kit configurations meet your requirements, build your own! The large variety of optics modules, options, specialty modules, and accessories allows configuration of your own custom unit. Follow the steps below to build your K2320.

Step 1: Select a **Mainframe** with or without a hard drive.

Step 2: Select an **Optics Module** with or with-out power meter and/or light source options.

Step 3: Select a **Transit Case** - a soft case or hard shell case.

Step 4: Select **SoftView** emulation software - Level 2 or 3.

Step 5: If desired, select **Visual Fault Locator (VFL)**.

Step 6: If desired, select **Accessories.**

Ordering Information – Build Your Own Compact OTDR

Step 1. Mainframe

Part Number	Description
K2320-X	0 = None 1 = Hard drive

OTDR mainframe: includes color monitor, floppy drive, AC power cord, and SoftView 1 OTDR emulation software that provides manual operation, view trace, two trace compare, and Bellcore GR196 measurements

Step 2. Optics Module (A La Carte)

The Power Meter and single-mode Light Source options are offered in the plug-in optics module. To order one or all of these items, order the following part number:

Note: For four-wavelength modules (multimode and single-mode OTDR), the first XX disignates the multimode OTDR, power meter (if ordered), and light source (if ordered).

K2320M - ☐☐ - ☐☐ - ☐☐ - ☐☐
1 2 3 4

1 Select OTDR.

13 = 30 dB, 1310 nm, single-mode module
14 = 28 dB, 1550 nm, single-mode module
15 = 30/28 dB, 1310/1550 nm, dual single-mode
23 = 36 dB, 1310nm, single-mode module
24 = 34 dB, 1550 nm, single-mode module
25 = 36/34 dB, 1310/1550 nm, dual single-mode
34 = 40 dB, 1550 nm, single-mode module
36 = 40/40 dB, 1310/1550 nm, dual single-mode
38 = 46 dB, 1550 nm, single-mode module
40 = 24 dB, 850 nm, multimode module
41 = 27 dB, 1300 nm, multimode module
42 = 24/27 dB, 850/1300 nm, dual multimode
56 = 24/27 dB, 850/1300 nm, multimode, 22/22 dB, 1310/1550 nm, SM quad module
57 = 24/27 dB, 850/1300 nm, multimode, 32/30 dB, 1310/1550 nm, SM quad module

2 Select Power Meter and/or Light Source Option(s).

00 = optics module only
10 = optics module with +10 dB power meter
20 = optics module with +20 dB power meter
01 = optics module with single-mode source
11 = optics module with source & +10 dB power meter
21 = optics module with source & +20 dB power meter

Note: Power meter and light source have the same connector type as the OTDR. For OTDRs with four-wavelength modules, the multimode connector type dictates the meter and/or source connector type.

3 Select Connector code for single-mode OTDR connector type or multimode OTDR conector type on four-wavelength OTDRs.

10 = Biconic
15 = D4
20 = SMA 905/906
25 = FC
30 = ST® compatible
35 = SC
40 = Diamond HP HMS-10
45 = Diamond HMS-0
50 = Diamond HMS-10/A
60 = FC Angle
65 = SC Angle
70 = DIN Angle
73 = ST Compatible Angle
80 = Diamond E-2000
85 = DIN

4 Select Connector code for four-wavelength OTDRs, single-mode connector type.

10 = Biconic
15 = D4
20 = SMA 905/906
25 = FC
30 = ST® compatible
35 = SC
40 = Diamond HP HMS-10
45 = Diamond HMS-0
50 = Diamond HMS-10/A
60 = FC Angle
65 = SC Angle
70 = DIN Angle
73 = ST compatible Angle
80 = Diamond E-2000
85 = DIN

Step 3. Transit Case

Part Number	Description
K2320-CASE-DLX	Deluxe hard shell transit case with wheels and collapsible handle
K2320-CASE-SFT	Deluxe soft carry case with extra storage compartments

Step 4. Optional – SoftView Emulation Software

Part Number	Description
K2320-SOFTVIEW2	Manual emulation operation with view trace, 8 trace compare, Bellcore GR-196 formatted trace measurement, save and recall. Plus fast analysis and batch printing
K2320-SOFTVIEW3	All of the above noted features, plus fast templates, bidirectional analysis, and global processing

Step 5. Optional – Visual Fault Locator (VFL)

Part Number	Description
K2320-VFL-XX	635 nm visual fault locator For "XX", choose Connector type: ST® compatible = ST; SC = SC

Ordering Information – *(continued)*

Step 6. Optional – Accessories

Optional Accessories for Multitester Plus II

Part Number	Description
K2320-CASE-DLX	Deluxe Hard Shell Transit Case with wheels & collapsible handle
K2320-CASE-SFT	Deluxe soft carry case with extra storage compartments
K2320-PRINTER	Thermal Printer with cable
K2320-PAPER-R	Printer paper (10 rolls/pk)
K2320-TRIPOD	Tripod
K2320-BATT	Replacement 12V battery
K2320-AC-POWER	Replacement AC adapter/charger (US)
K2320-31825	Auto adapter and charger
K2320-Serial-FF	Serial cable Null 9F to 9F
K2320-Serial-FM	Serial cable 9F to 9M
K2320-KEY-US	US keyboard
K2320-KEY-GE	German CE keyboard
K2320-KEY-FR	French CE keyboard
K2320-KEY-SP	Spanish CE keyboard
K2320-KEY-IT	Italian CE keyboard
K2320-TMANUAL	340 Training manual
K2320-MANUAL	340 User's manual
K2320-SOFTVIEW2	Emulation operation, 8 trace overlay with save & recall, batch printing
K2320-SOFTVIEW3	All above plus bidirectional analysis, global batch processing
K2320-TFBM-XX-XX	Multimode test fiber box (launch cable) 91 meters – XX = ST® compatible, SC, FC*
K2320-TFBS-XX-XX	Single-mode test fiber box (launch cable) 305 meters – XX = ST compatible, SC, FC*
K2320-PARALLEL	Parallel cable DB25M to DB25M
K2320-WARRANTY-1	Additional 1 year warranty – includes one calibration; must be ordered at time of purchase; (not sold after shipment)
K2320-AC-US/J	AC Power Cord for US and Japan
K2320-AC-EUROPE	AC Power Cord for Europe
K2320-AC-UK	AC Power Cord for United Kingdom
K2320-AC-SWISS	AC Power Cord for Switzerland
K2320-AC-ITALY	AC Power Cord for Italy
K2320-AC-AUSTRALIA	AC Power Cord for Australia
K2320-MF-460	10 dB Power Meter Filter

** Other connector types available upon request.*

EXAMPLE: To order a K2320 Compact OTDR with hard drive, 1310 nm (36 dB) single-mode OTDR with a standard power meter, field-installable VFL, ST® compatible connectors, Level 3 software, soft transit case, and a single-mode test fiber box:

Example	Part Number	Description
Step 1:	K2320-1	Mainframe with hard drive
Step 2:	K2320-2310-30	1310 nm Single-mode (36 dB), ST compatible with standard +10dBm power meter)
Step 3:	K2320-CASE-SFT	Soft Case
Step 4:	K2320-SOFTVIEW3	Level 3 Emulation software
Step 5:	K2320-VFL-ST	635 VFL ST compatible
Step 6:	K2320-TFBS-ST-ST	OTDR Test Fiber Box, single-mode, ST compatible

Create Your Order

	Part Number	Description
Step 1:	K2320 - ☐	Mainframe
Step 2:	K2320 - ☐ ☐ ☐ ☐ - ☐ ☐ - ☐ ☐	Module
Step 3:	K2320 - CASE - ☐ ☐ ☐	Transit Case
Step 4:	Option	
Step 5:	Option	
Step 6:	Option	

Model K2320 Compact OTDR

Ordering Information

Specialty Modules

Part Number	Description
K2320-6100-XX	1244 nm SM, water intrusion testing
K2320-7100-XX	1625 nm SM, out of band testing
K2320-6400-XX	1244/1625 nm, water intrusion and out of band testing

Note: Other specialty module configurations are available. Please call for details.

Optical Module Options / Accessories

Visual Fault Locator (field installable option)

K2320-VFL-FC module
K2320-VFL-ST® compatible module
K2320-VFL-SC module

OTDR / Source Universal Adapter (one included for each OTDR port, additional adapters must be added as separate line item)

XX Connector Codes	Connector Adapter Type	OTDR Adapters	Power Meter Adapters
10	Biconic	UA-10	MA-10
15	D4	UA-15	MA-15
20	SMA 905/906	UA-20	MA-20
25	FC	UA-25	MA-25
30	ST compatible	UA-30	MA-30
35	SC	UA-35	MA-35
40	Diamond HP HMS-10	UA-40	
45	Diamond HMS-0	UA-45	
50	Diamond HMS-10/A	UA-50	
60	FC Angle Connector Adapter	UA-60	
65	SC Angle Connector Adapter	UA-65	
70	DIN/HRL-10 Angle Connector Adapter	UA-70	
73	ST compatible Angle Connector Adapter	UA-73	
80	Diamond E-2000 Angle Connector Adapter	UA-80	MA-80
85	DIN 47256	UA-85	MA-85
	FDDI	——	MA-00
90	Diamond GFS-3	——	MA-90

More information contact a Siemens branch office or OTE, 1978 8th Avenue NW, Hickory, NC 28601 USA.

Siemens is a registered trademark of Siemens Aktiengesellschaft. CheckPoint, SmartTest, AutoIncrement, and DualTrace are trademarks of GN Nettest (New York) Inc. ST is a registered trademark of Lucent Technologies. All other trademarks are the properties of their respective owners. Printed in USA. TEQ-64 / June 1999 / 3M

Specifications are subject to change without notice.